ISSN 0228-4111

NEWSLETTER OF THE LONDON CHAPTER,
ONTARIO ARCHAEOLOGICAL SOCIETY

LONDON CHAPTER
OAS

September, 1987

87-6

The Role of Faunal Analysis in Archaeological Interpretation: An Ontario Observation

Dem bones, dem bones. Yes, "dem bones" is what **Rosemary Prevec** will be discussing as she shares some of her observations made over the last few years, being one of the most in-demand faunal analysts in Ontario. Meeting time is at 8 PM, Thursday October 8, Museum of Indian Archaeology, 1600 Attawandaron Road, in northwest London. So bring out your field-weary bag o' bones and meet us for our first speaker night of the Fall season.

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EXECUTIVE REPORT

It has been a long field season, and for many this year the end is still one or two months away. However, since everyone has been busy the Chapter has remained rather calm. Very little happened over the course of the summer (or rather since the "May" issue of **KEWA**, which was sent out in early July). Both new memberships and orders for Occasional Publications 1 and 2 have kept up a modest pace over the summer, as have efforts for putting together further volumes. Both Occasional Publications editor Neal Ferris and the Prehistory of Southern Ontario volume editor Chris Ellis have been meeting to determine the shape and format of that publication, and submissions from contributors should start arriving by the end of October. As well, The Chapter will be applying for grants to assist in the publication of this volume, in order to make a large enough run that the text can be marketed to Universitys as a possible course book. Anticipated publication of the volume at this point in time is the fall of 1988, depending on how forthcoming our contributors are!

Over the summer our Local Initiatives Committee was quiet, with committee chairman Mike Gibbs concentrating on earning a living. Mike assures us that he will be reporting to the executive in early October on his first six months as the London Chapter representative on the London LACAC. While generating support for archaeological conservation has been an uphill battle, Mike has said that some preliminary support for our concerns is starting to grow on LACAC. As well, Mike will also report on his recent trip to Quebec City, where he attended the annual Canadian Heritage Foundation meeting, courtesy of the London LACAC. Who says working for the London Chapter doesn't have its perks?! On other fronts, the Chapter did manage to send off a written response to the Heritage Act Review Committee. As the submission deadline was July 31st, and with most people in the field or away getting married, it was a bit of a scramble to get something out in time. Comments were limited to the licencing process and the relationship of archaeology to other sectors of the Heritage community. The full text of the response will be included in next month's issue of **KEWA**.

The executive is presently looking for one or two members who would like to serve on our **KEWA** editorial committee. Duties include editing, producing and marketing our newsletter, as well as soliciting articles, communicating with authors and the Chapter executive, and handling the newsletter budget. This offer is open to anyone who can spare one or two days or nights a month to work on the newsletter at the Chapter office. Anyone interested should contact an executive member at the next speaker night, or at the Chapter office (433-8401).

On other matters, the Chapter has purchased two copies of the recently published **Canadian Historical Atlas: Volume 1**, which is already out of print at the publishers, and will be completely out of print when store copies are bought up. Once that occurs copies will be quite valuable, and as such we would like to use one or both of the copies in promotional ways to generate funds for specific projects. Any suggestions would be welcome.

The OAS/MCC sponsored project "Passports to the Past" started up this past summer, with a wide range of volunteer field opportunities available for participants. For those who may not of heard, first time registration into the Passports program costs $10.00, providing individuals with a passport to log volunteer efforts, and enables the member to take advantage of a toll free number which lists volunteer opportunities in his or her area. Also, each participant is requested to fill out a form which describes what work they would like to do, and where they'd like to do it, so that people can be contacted if an emergency dig comes up in their area. Future opportunities under the passports program may include workshops and seminars on various aspects of archaeology in Ontario. Interested members can join by contacting the OAS administrator at 103 Anndale Dr., Willowdale Ontario, M2N 2X3. Remember, the London Chapter can stamp passport activities, and our summer field projects this past year are eligible for stamping. Also, retroactive stamping is allowed for past volunteer service.

While on that theme, the Chapter is still conducting excavations near Chatham at the Van Bemmel site, as a field opportunity for Chapter members. Excavations will continue until early November, and anyone interested in coming out for a day or days can do so. There are opportunities for people to come out either during the week or on weekends, depending on availability of supervisors. Those from the London area can usually catch a ride from the Chapter office to the site, if so desired. While preliminary work has revealed a great deal about the Van Bemmel site (a ca. 1100 A.D. Younge phase fall or winter camp), much more work is required before the whole site can be properly interpreted. As the site will be destroyed by agricultural activities, it is hoped to finish excavations as soon as possible. Anyone interested in coming out to the site can contact Neal Ferris at 433-8401, or John Sloan (who lives immediately across from the site) at 354-6390.

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October Weekend Activities

On the weekend of October 17 and 18 two fall festivals will happen at reconstructed Iroquoian Villages in Southwestern Ontario. The annual Fall Harvest Weekend At the Museum of Indian Archaeology here in London will be on that weekend, and featuring Native crafts, foods, dances, artifact replications and excavations. At the Crawford Lake Conservation Area a Heritage Weekend, featuring artifact replication and identification, crafts and displays, will be hosted by the Halton Region Conservation Authority. The Crawford Lake Conservation Area is situated just south of Highway 401, along Guelph line in Milton. ACO members from the area will be exhibiting collections at Crawford Lake, and MCC, Halton region, and Museum of Indian Archaeology staff will provide the workshops in artifact replication and identification.

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OAS 14th Annual Symposium
October 23-25, 1987
Ottawa Ontario

Rivers Through Time: Archaeology Along Our Eastern Waterways

The 14th annual OAS symposium will be held this year at the Skyline Hotel in Ottawa Ontario, and is being organized by the Ottawa Chapter of the OAS. A number of papers will be presented on a wide range archaeological research related to eastern Ontario. A Banquet Saturday night will feature a presentation from Dr. J.V. Wright of the National Museum of Man. Tours of some of the many facilities in Ottawa are available to participants on the Friday of the Symposium. To find out more, contact the 1987 OAS Symposium Committee, P.O. Box 4939 Station E, Ottawa Ontario, K1S 5J1.

SOCIAL REPORT

The Chapter hosted a summer picnic last July 18, once again at the East Park Golf Course in London. Unfortunately not as many members turned up as the year previous, due in part to heavy workloads, excessive marriage arrangements, and sweltering heat. However our annual Pro-Am Golf Tourney went off again this year. Because of the great number of tourney participants, two separate tee-off times were scheduled. Chris Ellis beat out the competition in the 12 noon start, while Chapter secretary Bob Pearce won in the earlier start group (sorry again, Bob).

Speaker nights will begin again on October 8th, with a presentation from Rosemary Prevec (see front for details). Unfortunately, our September speaker night was cancelled since it also happened to be the night that David Peterson decided to hold the provincial election. While the executive tried to phone as many people as possible, we are sorry if anyone wasn't informed of the cancellation in time.

The Thursday following Rosemary's talk will be the first Lab Nite of the season. Anyone interested in coming out to 55 Centre Street and getting a real "hands on" experience with Ontario archaeology is welcome to attend. This year material from the Chapter's own Van Bemmel Excavations will provide some of the work, as will artifacts recovered from the Robson Road rescue excavation conducted earlier this year in Leamington. Both sites are primarily Western Basin Late Woodland sites, although the Robson Road site did have some Middle Woodland material, while the Van Bemmel site has at least two Archaic occupations represented in the collection as well. Doors will open at 55 Centre Street around 7:00 P.M., and the Peachy's benevolent society will hold their first meeting somewhere between 9:30 and 10:00 that night. As always, if any member is interested in getting some training in a particular type of artifact analysis, or has a specific project they'd like to work on during Lab Nites, arrangements can be made.

With winter quickly approaching, arrangements should be made shortly regarding a place to hold our annual Christmas Party. If anyone is interested in hosting the event please contact a member of the Executive. It will be tough to beat Carl and Judith's effort last year, but we can give it a try! The Chapter would also like to congratulate Carl and Judith on their recent marriage, and wish them all the best. Likewise best wishes should also be extended to Neal and Nina, Wayne and Diana, Christine and Dana, all of whom decided to explore marital bliss this summer...no wonder everyone was busy!

EDITOR'S REPORT

In accordance with a fine old tradition, our September **KEWA** comes out late again! Problems with field obligations, photocopier woes and a host of other things to worry about has led to the present delay. Also, thanks to a second mail strike, many of you may not read this newsletter until Christmas! Oh well, we try to service. One of the main reasons for a delay in getting **KEWA** out is a result of a lack of hands. As mentioned earlier, your editor would be most happy to accept some help from other members of the Chapter. Your obligation would be for only one or two days or evenings a month, and would not be great. Please contact a member of the executive if you are interested in helping.

Enough griping. The following contribution by Jim and Sue Pengelly is on their work at the Bonisteel site, a very late Glen Meyer or very early Middleport (Middle Iroquoian?) occupation on the Lake Erie shoreline near Port Colborne in Niagara.

THE BONISTEEL SITE: AN ONTARIO IROQUOIAN SETTLEMENT ON LAKE ERIE

Jim and Sue Pengelly

The Bonisteel site is located on the Lake Erie shore, to the east side of Morgan's point (Figure 1), 35 km west of the Niagara River.

Site History

The existence of the Bonisteel site has been known to local residents since the land was first worked over 150 years ago. Local collectors such as Mr. Brian Hill, a grandson of Mrs. Bonisteel, lived next to the site and built up an extensive collection over the years. Brian has since moved to Toronto along with his collection and there was no chance to examine his material. The site was first recorded by Paul Lennox (1976) in 1975 during his archaeological field survey of the Niagara Peninsula. It was registered as AfGu-2 and identified as a late Glen Meyer village. Later in 1975, a crew of men installing a gas pipeline at a nearby cottage unearthed the partial skeleton of a child -- identified as being a 9 to 11 year old Indian, who lived sometime between 600 and 1500 A.D.

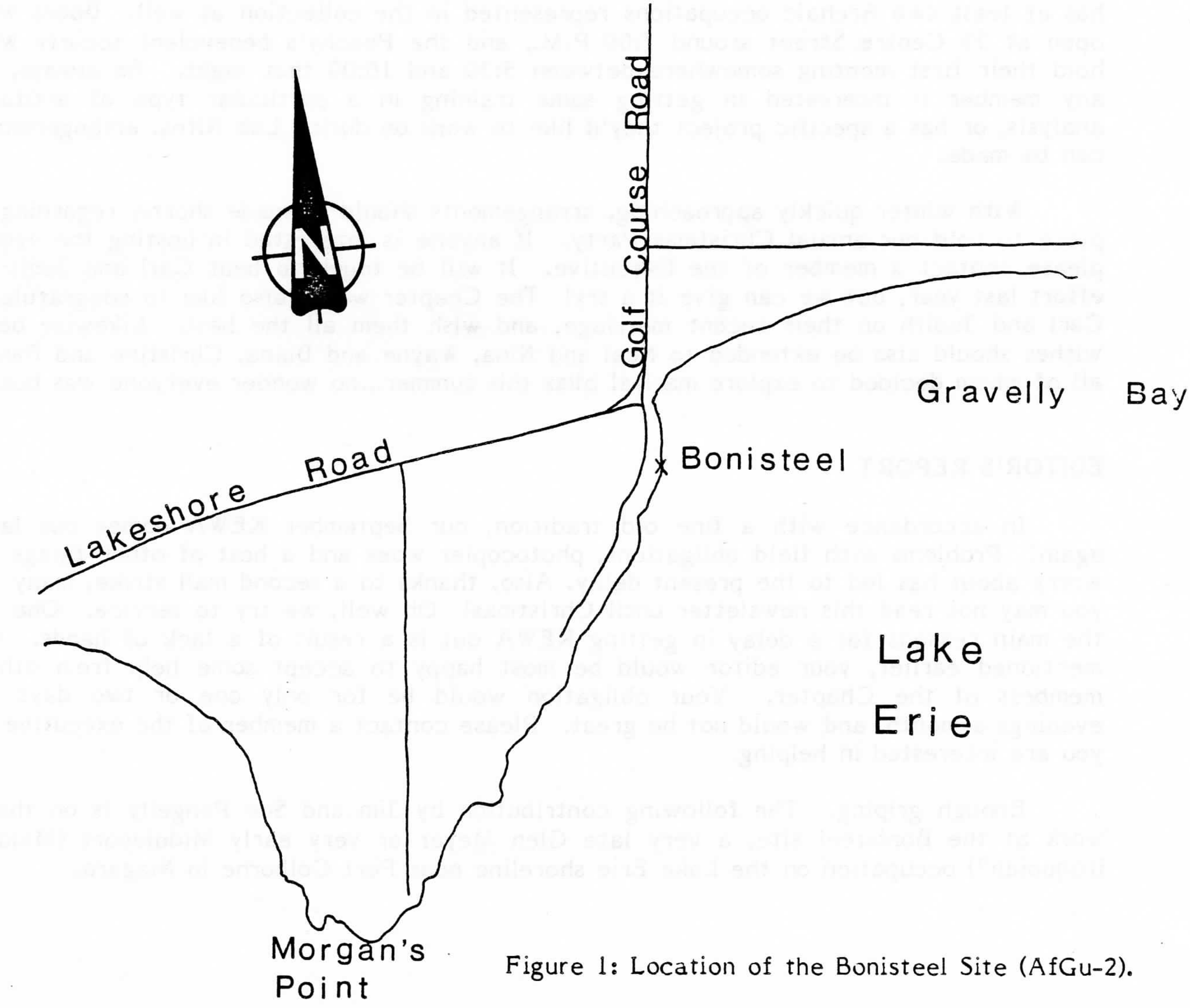


Figure 1: Location of the Bonisteel Site (AfGu-2).

During 1979 and 1980, a Port Colborne resident, Mrs. Loretta St. Louis, did some survey and test pitting on the Bonisteel site and recorded some of the local collections. Mrs. St. Louis reported her findings to the Regional Archaeologist of the Ministry of Citizenship and Culture and deposited the artifacts at the Port Colborne Historical and Marine Museum. Dr. William Noble and Paul Lennox visited the site during the summer of 1979 and examined Mrs. St. Louis' collection. She reported her concern that the site was being visited by collectors and was also being eroded by the rising Lake Erie water levels.

We first visited Bonisteel in late 1984, when asked by Bill Fox to monitor the site as part of the Archaeological Conservation Program. Since 1984, we have visited the site on dozens of occasions, recovering hundreds of artifacts from the lakeshore bank as high water levels and lake storms eroded another 10 to 15 meters from the site. In May of 1986, erosion exposed the remains of a burial pit containing two individuals. These were subsequently excavated by Bill Fox, Regional Archaeologist, Dr. Michael Spence of the University of Western Ontario, and Constable David Briggs, Forensic Department, Niagara Regional Police.

In November and December 1986, during the construction of a breakwall along the lakeshore, a crew from the Township of Wainfleet bulldozed a further 2 to 3 metres of the Bonisteel site and sealed their excavation with tons of limestone blocks and loads of clay fill.

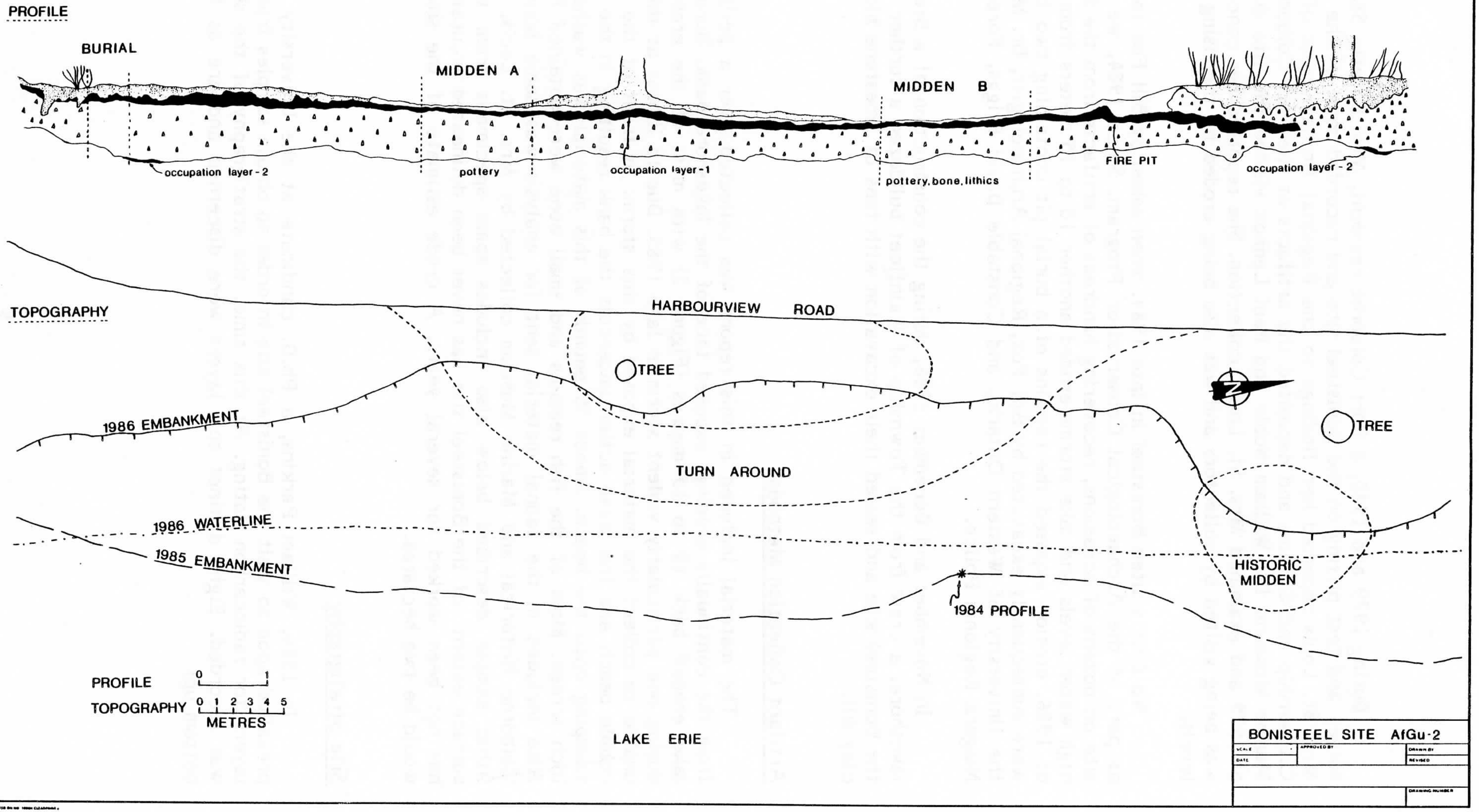
Artifact Collection Methods

The material included in this report was collected over a period of 24 months from the continually eroding, exposed face of the lakeshore bank. During this time, the lake eroded back 10 to 15 metres (Figure 2) with most of the erosion taking place during one particularly violent storm in late 1985. Due to illness at this time, we were unable to collect the material exposed by this storm. In front of the site is a gravel, cobble beach and the wave action undercuts the bank resulting in the occupation layer slumping onto the beach. About 50 pounds of this material was washed through a 1/8 inch screen. Most of the fish remains and small bone were obtained from this sample. Also included in the faunal material sent for analysis was some bone from the Port Colborne Historical and Marine Museum collected by Mrs. St. Louis. The pottery and lithic sample described below also includes some specimens from this source. The surface extent of the Bonisteel site has never been delineated accurately and the land has not been worked for several years. A crude estimate of the site's surface area would be two hectares.

Site Stratigraphy

In 1984, William Parkins, a Ph.D. candidate at the University of Ottawa, was prevailed upon to visit the Bonisteel site in order to obtain samples from the occupation layers for radiocarbon dating. At this time, the stratigraphy of the shoreline deposits was recorded. Eight distinct soil layers were discerned and are as follows from the bottom up:

Figure 2: Stratigraphy of the Bonisteel Site (above) and Planar Map of Erosional Faces (below).



Bonisteel Site Stratigraphy

(1) Onondaga Limestone Formation, Clarence Member.

(2) 100 cm (approx.) beach deposits.

(3) 100 cm (approx.) covered interval.

(4) 12 cm light brown, medium grained sand.

(5) 15 cm medium brown, medium to coarse grained sand with abundant well-rounded to sub-rounded, water-laid cobbles.

(6) 10 cm light, brownish-yellow, medium to coarse-grained sand, with abundant, well-rounded to sub-rounded, water-laid cobbles with locally abundant chert flakes and small gastropod shells. A small fire pit feature was part of this horizon, which is referred to below as occupation layer #2.

(7) 48 cm light brown, medium to coarse-grained sand with abundant well-rounded to sub-rounded, water-laid cobbles with a few chert flakes.

(8) 31 cm black, organic-rich, medium to coarse-grained sand with abundant chert flakes. This is the level called occupation layer #1 and it contained all of the artifacts obtained from the site.

In 1986, after the bank had eroded up to 10 metres, the stratigraphy was again observed: the layers were basically the same as recorded in 1985 except that layer 8 was covered by a deposit of medium to fine grained sand with well-rounded to sub-rounded cobbles. No artifacts were evident in this uppermost zone, which ranged from 0 to 25 cm in depth, averaging 5 to 10 cm.

The original limestone layer that was uncovered by the glacial advance into the Erie basin was recovered as the glaciers retreated north out of the basin. Modern beach deposits hide most of this glacial till and post-glacial, clay lake deposits. In early post-glacial times, Lake Erie fell to far below modern levels, but then began to rise. There were episodes of relatively high and low levels, which to some extent were determined by climatic conditions. The Bonisteel site stratigraphy documents some of these high water episodes.

During a high water period, a light brown medium-grained sand (layer 4) was deposited on top of the glacial till and clay. As the lake levels fell further, the site became a shoreline on which medium and coarse-grained sand was deposited along with rounded and sub-rounded cobbles (layer 5). The same process can be seen on the modern day beach. The lake level fell slightly further and the beach deposits were occupied by native groups and vegetation (layer 6). A fire pit from this layer gave a date that corrects to approximately 1600-1100 B.C.

The lake levels again rose and the site was inundated. About 50 cm of medium to coarse-grained sand and abundant cobbles (layer 7) were deposited on top of occupation layer #2. It is very probable that this rise in lake level also destroyed most of the occupation layer, as it appears only sporadically along the embankment and the fire pit was only about 5 cm deep.

Once more the lake levels dropped. Vegetation again appeared on the site (layer 8) and it reoccupied by Native groups. This was the time of major occupation and an Ontario Iroquoian settlement was situated on the deposits. After this, the site may have been covered by lakeshore deposits once again.

While the need for test pits further inland is required before the stratigraphy can be confirmed, it is certain that the site was inundated by Lake Erie on at least two occasions and that the deposits were laid down fairly rapidly in a shallow water environment. It is possible that the site was inundated on two further occasions but this cannot be stated with any certainty. The fact that the site is being threatened today by high water levels and that the present Lake Erie levels are still about 2 meters below the top of the embankment shows that the rise in lake levels necessary to inundate the site would have been dramatic. The two dated occupation layers suggest that these rises occured sometime after ca.1600-1100 B.C. and again during or after the 13-14th centuries A.D.

Radiocarbon Dates

BGS-987

A sample of organic soil, which contained charcoal, was obtained from occupation layer #1. The sample was pretreated for carbonates and the charcoal pieces were separated from the soil. The resulting date was 540 +/- 120 years B.P. or 1410 A.D. Correction factors for C14 variation in nature (Klein et al. 1982) provides a calendrical date of 1270-1475 A.D.

BGS-1130

This sample consists of carbonized corn from the firepit in occupation layer #1. HCl was used to remove any carbonates; no roots were noticed. The resulting date was 460 +/- 80 B.P. or 1490 A.D. The correction factor for corn dates is -245 +/- 50 (Browman 1981:271), providing a date of 1245 A.D. or a calendar date of 1200-1405 A.D. (Klein et al. 1982). Lately, there has been a re-examination of the dates obtained from corn (Creel and Long 1986). This new look at the data has led to a belief that corn dates can be more accurate than charcoal, which may be part of the inner portion of the tree from which it was obtained. This inner wood could be much older that the outer layers, thus giving a much earlier date.

BGS-986

This sample is from the small fire pit in occupation layer #2. The date was obtained from charcoal separated from the sand and washed with HCl to remove any carbonates. The calculated age was 3070 +/- 120 years present, which corrects to a calendar date of 1585-1100 B.C. (Klein et al. 1982).

The overlap of the two carbon dates for occupation layer #1 suggests that the Ontario Iroquoian component of the Bonisteel site dates to the 13th or 14th centuries A.D. The single reading for occupation layer #2 indicates that the first component on the site dates to the Late Archaic period.

Ceramics (Figures 3 - 8)

The pottery sample from the Bonisteel site includes hundreds of sherds, many of which are micro-sherds too small to analyze.

The rim sherds were analysed using MacNeish's (1952; also Lennox, Dodd and Murphy 1986) typological approach. A vessel rather than a rim count was made for the following analysis. The sample consists of 41 vessels of which 27 are represented by sherds large enough to determine their type with a high degree of confidence and a further 14 for which the typological identifications are less certain.

The sherds included in the following list are those that could yield a reasonably accurate identification:

Rim Type	f	%
Ontario Horizontal	8	29.6
Ontario Oblique	7	25.9
Iroquois Linear	3	11.1
Uren Corded	3	11.1
Lawson Incised	3	11.1
Middleport Oblique	1	3.7
Uren Noded	1	3.7
Niagara Collared	1	3.7
Total	27	100.0

The remaining 14 rims could not be typed with a high degree of certaintly but are believed to represent the following types: Ontario Horizontal, 8; Ontario Oblique, 4; Iroquois Linear, 1; Niagara Collared, 1.

Castellations were observed on 6 of the rims. None of these carried a chevron under the castellation. Castellation motifs were a continuation of that for the rest of the rim.

In addition, two juvenile rims not included in the above lists were recovered. One was decorated with an Ontario Horizontal motif and the other had a combination of plain and rib paddle design.

Body Sherds

Surface Treatment	f	%
Plain	142	48.3
Ribbed Paddle	44	15.0
Cord	30	10.2
Smoothed over cord	16	5.4
Unidentifiable	62	21.1
Total	294	100.0

Neck Sherds

Surface Treatment	f	%
Plain	38	80.9
Smoothed Cord	6	12.8
Ribbed Paddle	2	4.3
Cord	1	2.1
Total	47	100.0

The dominant pottery types at Bonisteel are Ontario Horizontal and Ontario Oblique; almost 50% of the rims (20 of 41) feature horizontal rim motifs (Ontario

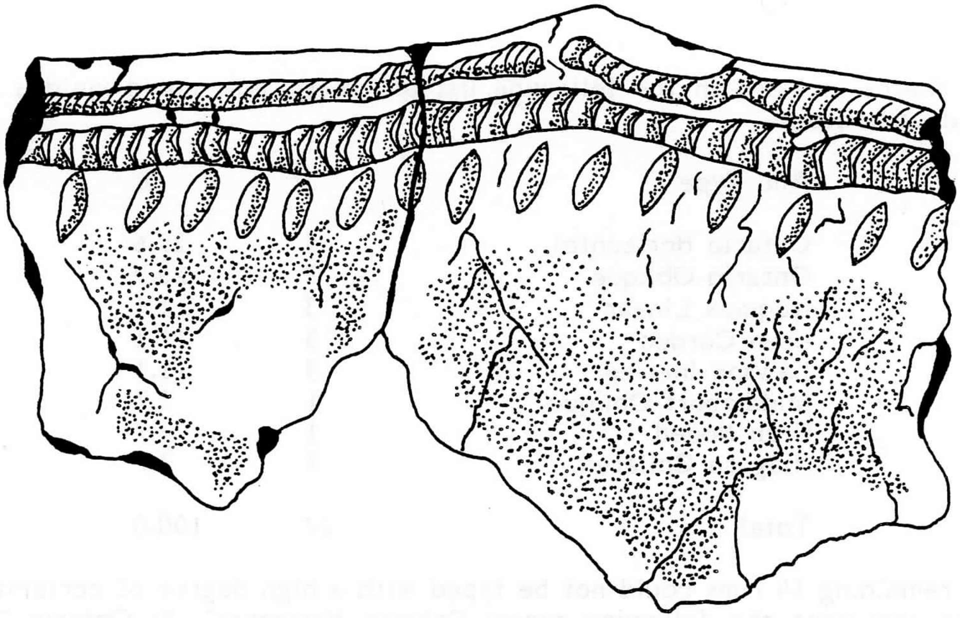
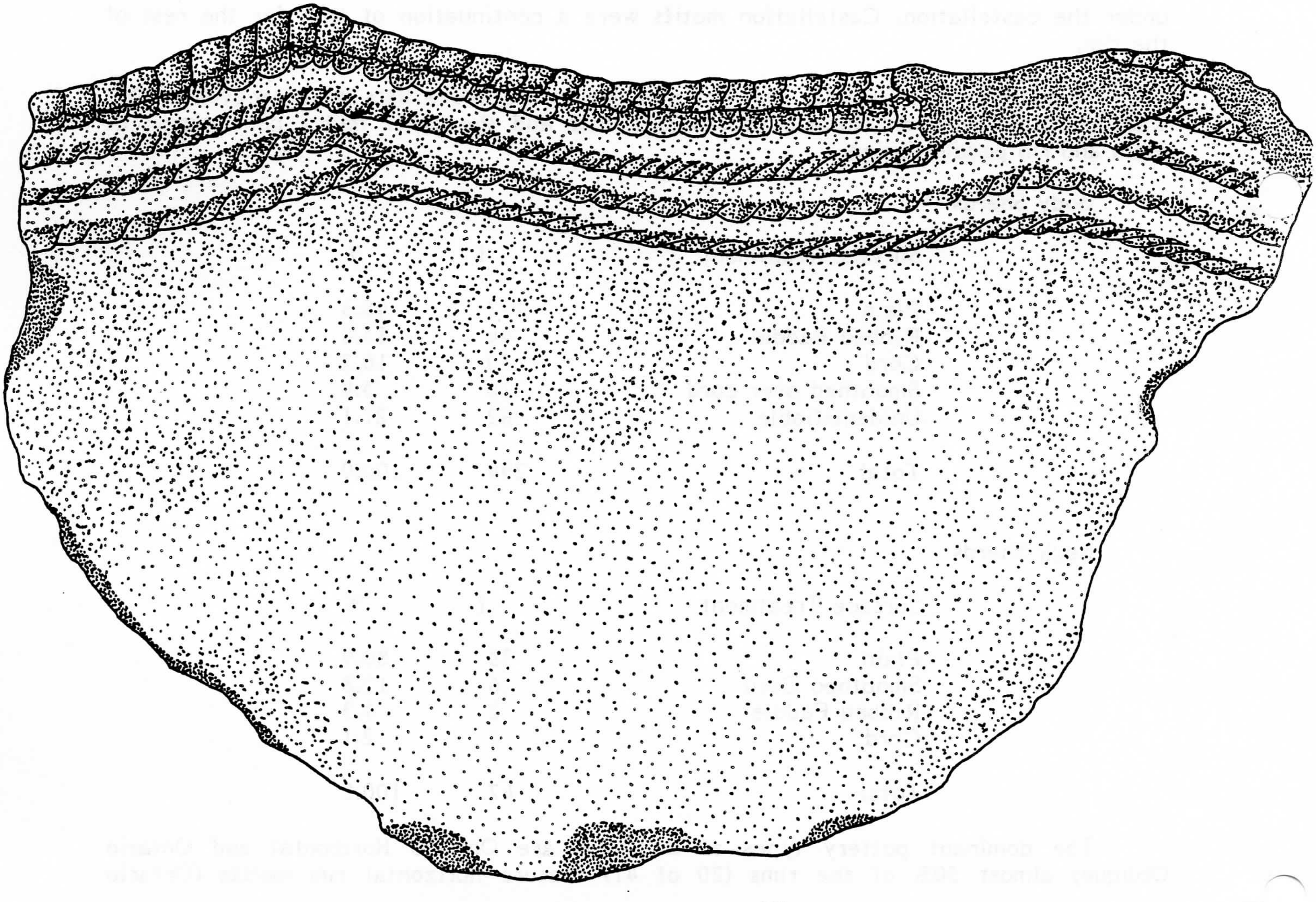


Figure 3: Rim from Bonisteel Site (this and subsequent artifact illustrations are actual size).



AFGU-2- 835

Figure 4: Rim from Bonisteel Site.

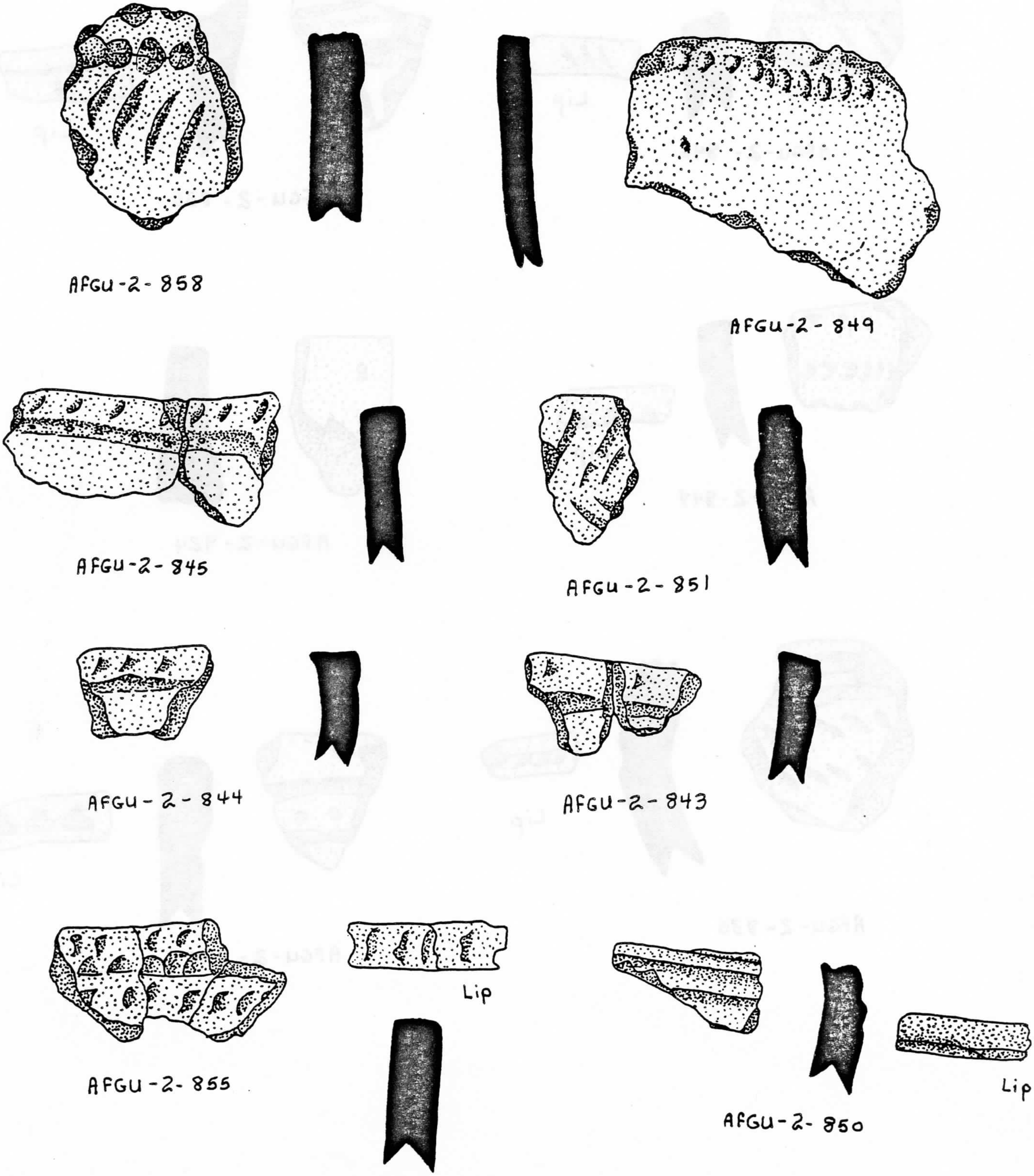

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Figure 5: Bonisteel Ceramics.

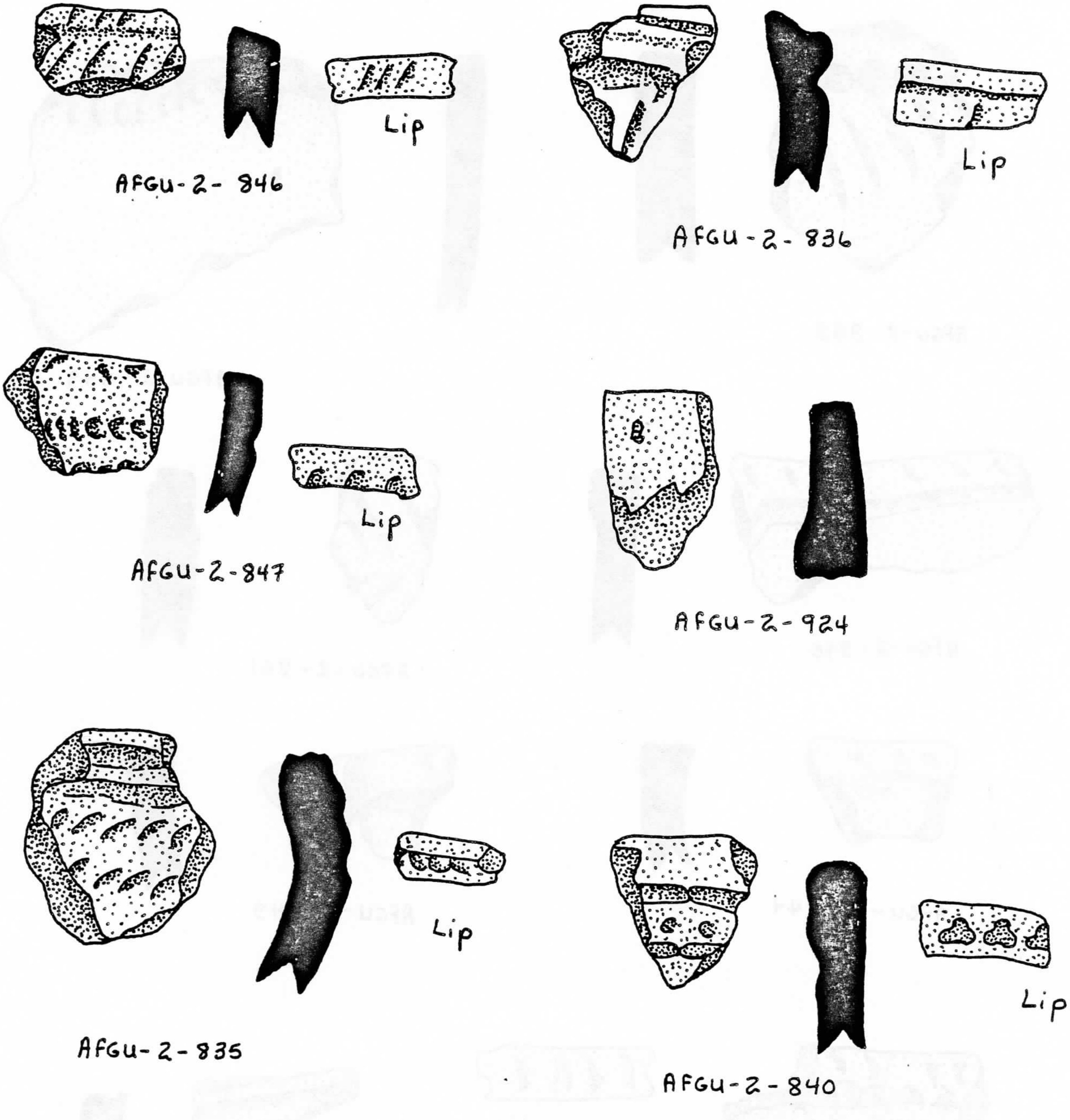

Figure 6: Bonisteel Ceramics.

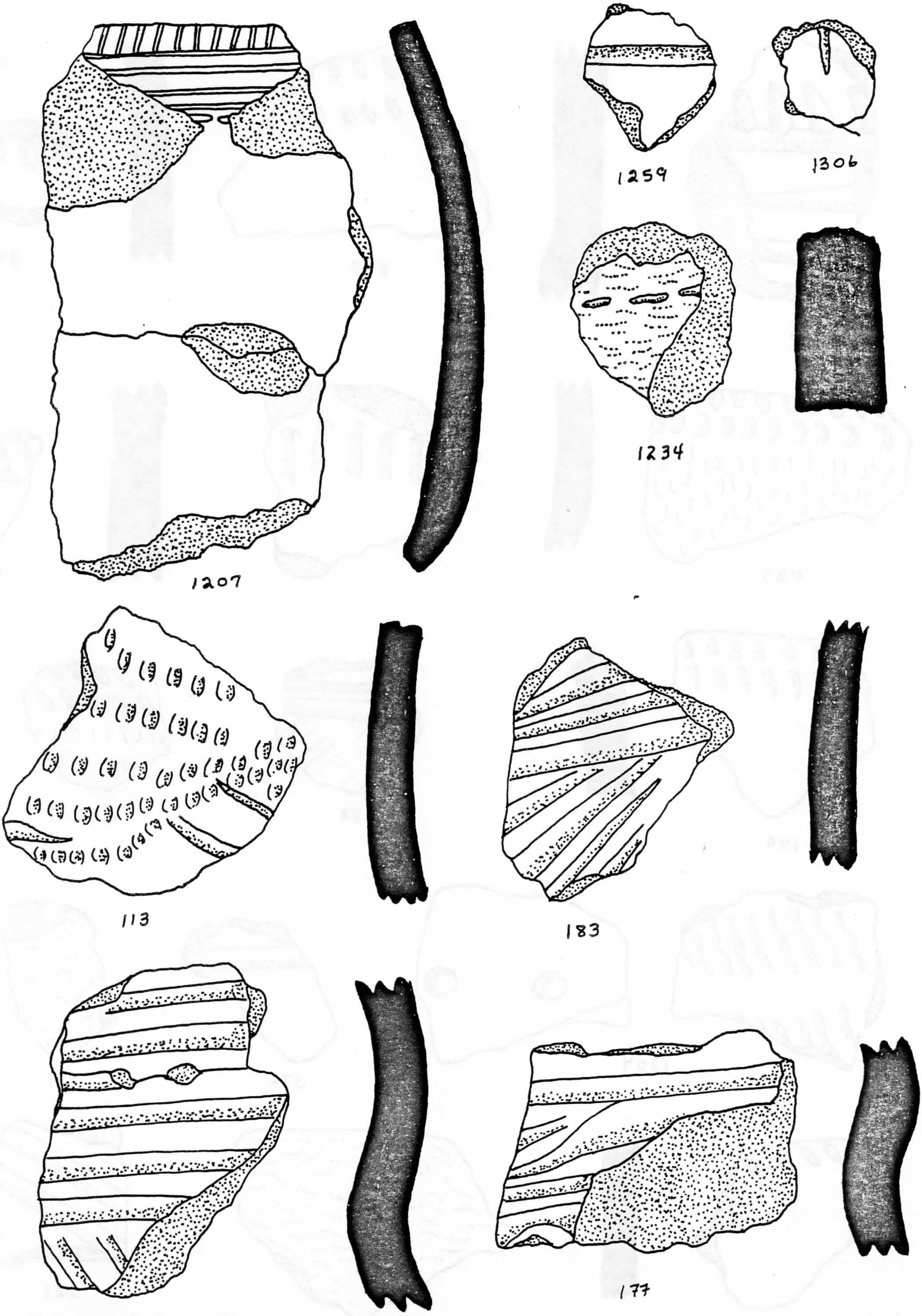

Figure 7: Bonisteel Ceramics.

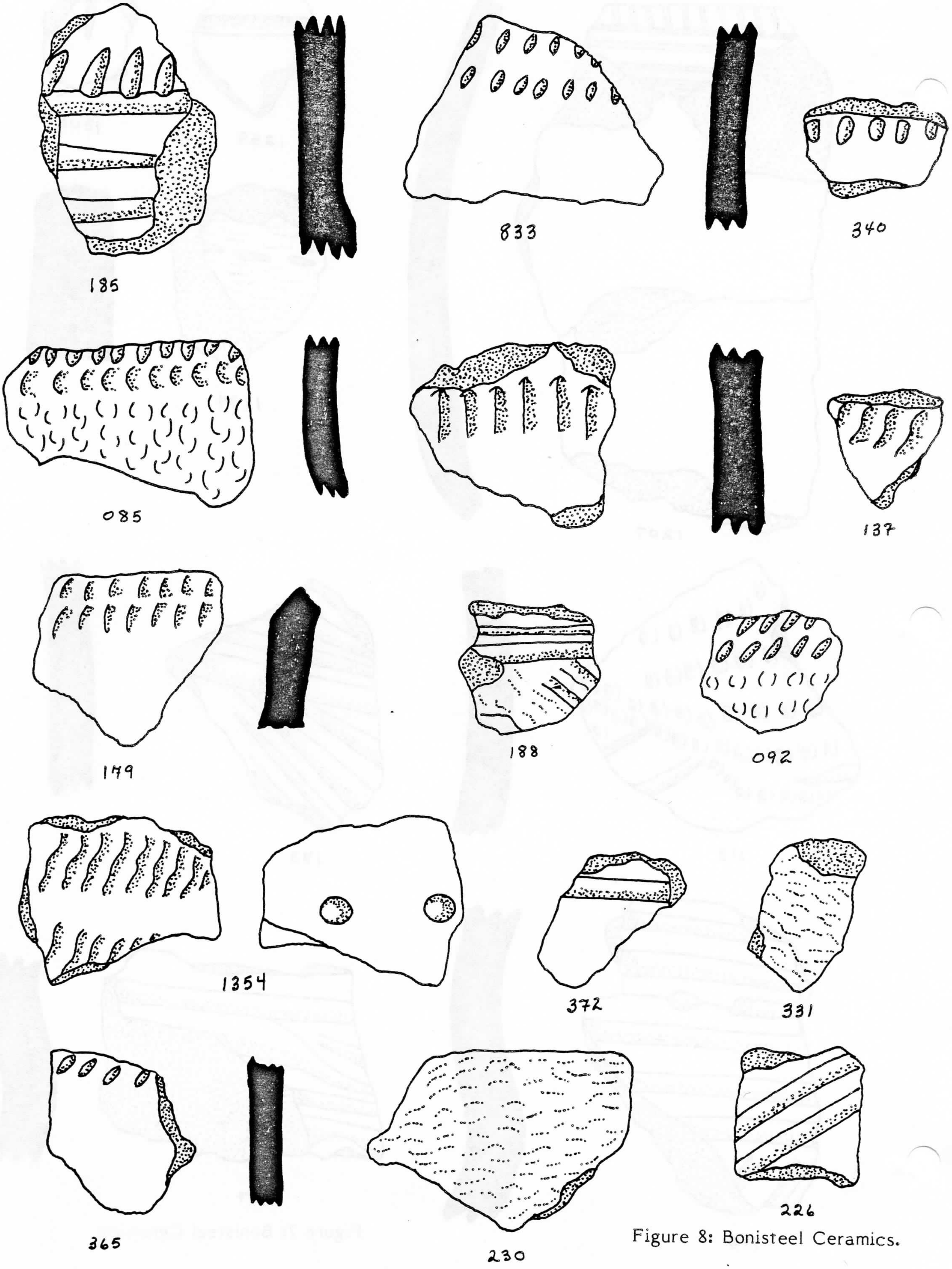

Figure 8: Bonisteel Ceramics.

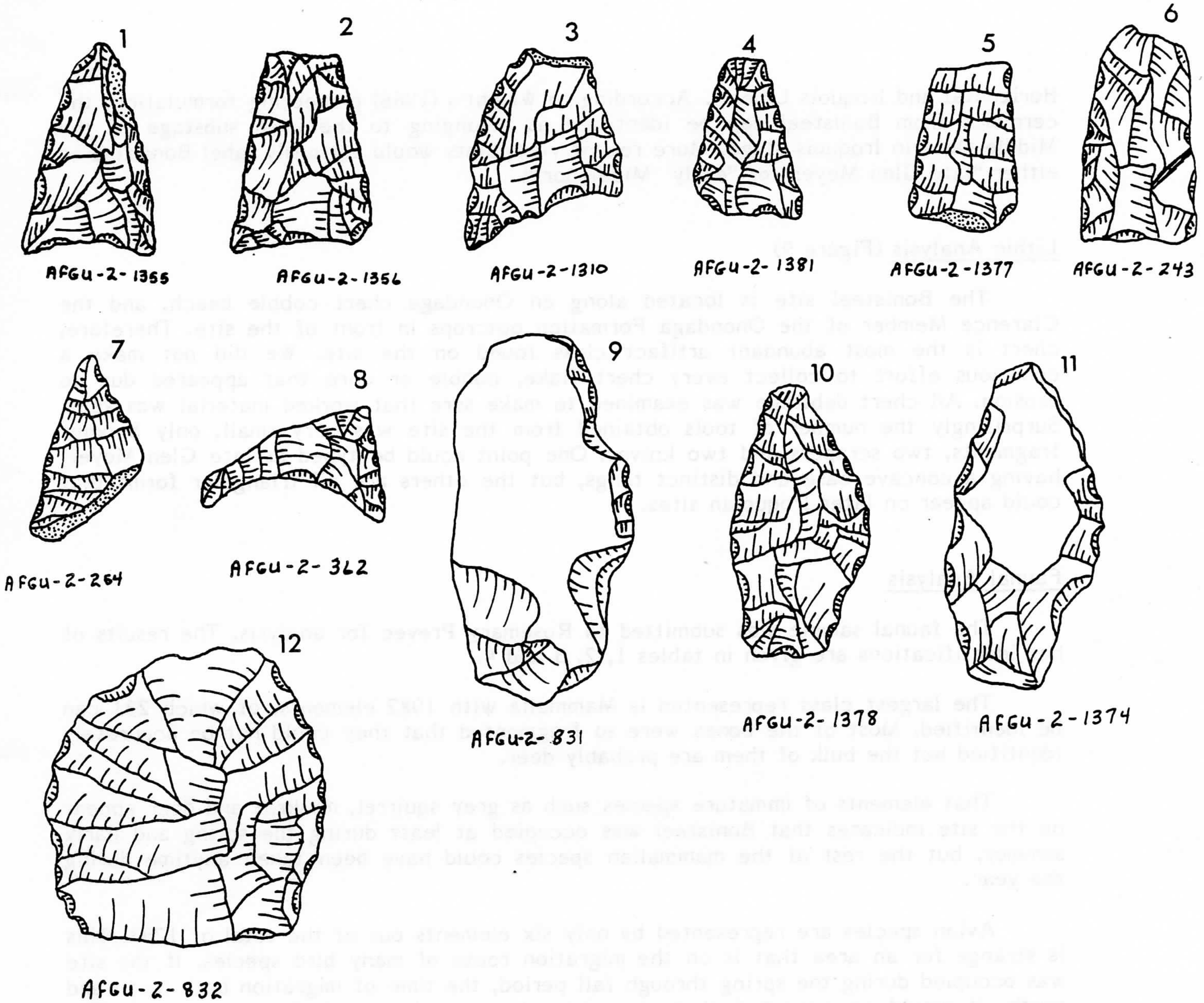

Figure 9: Bonisteel Lithics.

Horizontal and Iroquois Linear). According to Wright's (1966) pioneering formulation, the ceramics from Bonisteel can be identified as belonging to the Uren substage of the Middle Ontario Iroquois stage. More recent viewpoints would variously label Bonisteel as either "late Glen Meyer" or "early Middleport".

Lithic Analysis. (Figure 9)

The Bonisteel site is located along an Onondaga chert cobble beach, and the Clarence Member of the Onondaga Formation outcrops in front of the site. Therefore, chert is the most abundant artifact class found on the site. We did not make a conscious effort to collect every chert flake, cobble or core that appeared due to erosion. All chert debitage was examined to make sure that worked material was kept. Surprisingly the number of tools obtained from the site was very small, only 8 point fragments, two scrapers and two knives. One point could be typed as late Glen Meyer, having a concave base and distinct tangs, but the others are all triangular forms that could appear on later Iroquoian sites.

Faunal Analysis

The faunal sample was submitted to Rosemary Prevec for analysis. The results of her identifications are given in tables 1, 2, 3 and 4.

The largest class represented is Mammalia with 1082 elements, of which 231 can be identified. Most of the bones were so fragmented that they could not be accurately identified but the bulk of them are probably deer.

That elements of immature species such as grey squirrel, muskrat and deer appear on the site indicates that Bonisteel was occupied at least during the spring and early summer, but the rest of the mammalian species could have been taken anytime during the year.

Avian species are represented by only six elements out of the total of 1299. This is strange for an area that is on the migration route of many bird species. If the site was occupied during the spring through fall period, the time of migration both north and south, it would be expected that more migratory species would be represented. The total lack of passenger pigeon, a species found in great abunance at other sites in the Niagara Peninsula, is baffling. Wild Turkey would have inhabited the area throughout the year. Canada Goose was probably most plentiful during the spring and fall migrations but today they can often be found along the lakeshore year-round, especially during warm winters.

The three species of turtle present at Bonisteel would probably have been taken during the months from May to October.

Of the fish species represented at the site, most spawned during the months from April to mid-September, except for whitefish, which spawns during November and December, and burbot, which spawns under the ice from December to March. That both whitefish and burbot are represented by only one or two elements may indicate that they were not taken during their spawning season. The greatest numbers of fish elements come from bottom feeders such as suckers, catfish and drum, which may indicate the site occupants were still-fishing at night with night lines; sturgeon is often caught in this way. The well-documented fact that native populations used nets such as

Faunal Report

Table 1 - Faunal Findings by Zoological Class

Class	Total faunal sample	# of identified faunal elements
Mammalia	1082	231
Osteichtyes	189	98
Aves	5	5
Pelecypoda	1	1
Reptilia	9	9
Class Undertain	13	
Total	1299	344

Table 2 - Immature Species

Grey Squirrel	5
Muskrat	1
Meadow Vole	1
White-tailed deer	21
Total	28

Table 3 - Burned Species

Grey Squirrel	6
Muskrat	1
White-Tailed Deer	3
Mammal sp.	50
Brown Bullhead	1
Ictalurus sp.	2
Stizostedion	2
Total	65

Table 4 - Total Species

Class	Species	Latin Name	# of Specimens
Mammal	Grey Squirrel	Sciurus carolinensis	60
	Red Squirrel	Tamiasciurus hudsonicus	1
	Chipmunk	Tamias striatus	6
	Beaver	Castor canadensis	4
	Muskrat	Ondatra zibethicus	6
	Meadow Vole	Microtus pennsylvanicus	1
	Domestic dog	Canis familiaris	1
	Raccoon	Procyon lotor	4
	White-tailed deer	Odocoileus virginianus	147
	Cow	Bos taurus	1
	Unidentified		851
Fish	Sturgeon	Acipenser fulvescens	2
	Bowfin	Amia calva	1
	Whitefish	Coregonus clupeaformis	2
	Pike or Muskellunge	Esox sp.	3
	Longnose succker	Catostomus catostomus	1
	White or Longnose sucker	Catostomus sp.	10
	Brown Bullhead	Ictalurus nebulosus	7
	Channel Catfish	Ictalurus punctatus	5
	Catfish sp.	Ictalurus sp.	29
	Burbot	Lota lota	1
	Bass sp.	Micropterus	2
	Rock Bass	Ambloplites rupestris	3
	Walleye or Sauger	Stizostedion sp.	17
	Perch or Walleye	Percidae sp.	1
	Perch-like fish	Perciformes sp.	2
	Drum	Aplodinotus grunniens	9
	Unidentified		91
Avian	Canada Goose	Branta canadensis	1
	Wild turkey	Meleagris gallopavo	1
	Song bird	Passerina sp.	2
	Chicken	Gallus gallus	2
Reptile	Snapping turtle	Chelydra serpentina	2
	Painted turtle	Chrysemys picta picta	5
	Pond turtle	Emydidae sp.	2
Pelecypoda	Clam sp.	Unionidae sp.	1
Uncertain			13
Total			1299

seines to catch fish makes the identification of site seasonality according to spawning season very tentative.

The catchment area of the Bonisteel site would have easily accomodated any of the identified species, since within a few kilometers of the site were lake, nut-forest and bog habitats. Only one kilometer to the north is the Wainfleet Bog, which would have been an ideal deer yarding area in the past, as it still is today. Beaver and muskrat must have been plentiful in the Wainfleet Bog area along with many avian species. Squirrels and chipmunks probably flourished in the oak, walnut, butternut and hickory stands that are indicated by the floral remains. The Bonisteel site is located along the Lake Erie shore with no small streams or rivers close by. Any of the identified fish species, however, could be taken from the lake during any season, even in winter.

Floral Remains

The floral material was submitted to Carl Murphy for analysis, with some supplementary identification being done by the authors (Table 5).

The cherry pits might indicate a summer occupation, but they were found in a cache with hickory nuts, butternuts, walnuts and sunflower seeds. Two caches of similar composition were found, one by Mrs. St. Louis and one by ourselves. The nuts and seeds would likely be collected in the fall. It is possible that the cherries were collected in summer and then dried to preserve them before being cached in the fall with the nuts. The corn kernels and sunflower seeds would tend to indicate a fall and perhaps winter occupation. The site, however, might have been occupied year-round since the cache pits that appear on the site are filled with mostly late summer and fall produce.

Table 5: Floral Analysis

Floral Sample

Water screened sample (identified by Carl Murphy)

Type	Number	Weight (grams)
Carya sp. (Shagbark Hickory)	152	5.33
Juglans sp. (Black Walnut)	9	0.29
Charred seed		
Corn kernel	(ca)200	5.43
Corn Cupule	120	1.82
Sunflower	1	(5.4 x 2.8 mm. does not include seed cover - pericarp)
Prunus virginiana (Choke Cherry)	3	
Vitis sp. (grape)	1	
Stem fragments	10	0.48
Plant fragments	29	0.54
Unidentifiable	4	
Wood Identification		
Fraxinus nigra (Black Ash)		0.76
Acer saccharum (Sugar Maple)		0.43
Quercus sp.(Oak sp.)		0.35

Food Caches and Some Fire Pit Samples (Identified by James Pengelly)

Type	Number
Corn Kernels	278
Sunflower	2
Cherry pits	168
Walnut	present
Hickory nut	67
Butternut	4

Conclusions

The carbon dates and artifacts from occupation layer #1 indicate that the Ontario Iroquoian settlement at Bonisteel likely dates to the 13th or 14th centuries A.D. The fact that the Bonisteel site is located along the lakeshore at a time when the Ontario Iroquoian peoples were mostly living inland in other areas of Ontario is easy to explain. In the Niagara Peninsula, south of the Onondaga escarpment, good agricultural land is at a premium. The soils are mostly clay and very shallow. Also, the only land suitable for agricultural settlement is a narrow stretch extending from the mouth of the Grand River east to the Niagara. As well, a lack of major streams in the southern Niagara Peninsula limits fishing to the lakeshore. The occupants of the Bonisteel site had rich yarding areas for deer as well as the use of the many other species available in the Wainfleet Bog. Other factors were the presence of rich spawing beds for fish along the north shore of Lake Erie, as well as the nut trees that grew near the site.

The stratigraphy at Bonisteel shows that Lake Erie levels have risen in the past high enough to inundate the site on at least one occasion and it is probable that the site was covered again after the Iroquoian occupation. This last deposit of material on the site cannot be confirmed at this time as to origin and further test pitting is needed further back from the lakeshore before the findings can be evaluated.

Acknowledgements

We would like to thank the following people who contributed greatly to the information obtained from the Bonisteel site over the past three years: Mrs. Rosemary Prevec, who gave us the benefit of her expertise and analysed the faunal material; Mrs. Heather Ott, Curator of the Port Colborne Historical and Marine Museum, who allowed us access to the Bonisteel site artifacts lodged in the museum; William Parkins, who helped us record site stratigraphy, analysed chert samples, assisted in recovering site material on several occasions, and acted as a sounding board for site interpretation; William Fox, Regional Archaeologist for the Ministry of Citizenship and Culture, who encouraged us to keep an eye on the site, to join the Archaeological Conservation Program, and supplied past site records; Dr. J.J. Flint and Mr. Howard Melville, Brock Department of Geology, who ran the carbon samples, helped find information on past lake levels, and gave vital information for stratigraphic interpretation; the Bonisteel family and Mr. Hall, who allowed us access to the site; Paul Lennox, who gave us an invaluable lesson in pottery typology and at the same time identified the Bonisteel sherds; Carl Murphy, who identified the floral material that was obtained by water screening. Any misidentification or misinterpretation after all this expert advice can be attributed to the authors.

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